



Spectral Gamma-Ray Borehole
Log Data Report

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Borehole

41-08-04

Log Event A

Borehole Information

Farm : <u>SX</u>	Tank : <u>SX-108</u>	Site Number : <u>299-W23-98</u>
N-Coord : <u>35,316</u>	W-Coord : <u>75,731</u>	TOC Elevation : <u>662.72</u>
Water Level, ft :	Date Drilled : <u>3/14/1962</u>	

Casing Record

Type : <u>Steel-welded</u>	Thickness : <u>0.280</u>	ID, in. : <u>6</u>
Top Depth, ft. : <u>0</u>	Bottom Depth, ft. : <u>75</u>	

Equipment Information

Logging System : <u>1</u>	Detector Type : <u>HPGe</u>	Detector Efficiency: <u>35.0 %</u>
Calibration Date : <u>03/1995</u>	Calibration Reference : <u>GJPO-HAN-1</u>	

Logging Information

Log Run Number : <u>1</u>	Log Run Date : <u>6/15/1995</u>	Logging Engineer: <u>Bob Spatz</u>
Start Depth, ft.: <u>0.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>76.5</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>

Borehole

41-08-04**Log Event A**

Analysis Information

Analyst : D.C. StromswoldData Processing Reference : Data Analysis Manual Ver. 1Analysis Date : 8/11/1995**Analysis Notes :**

This borehole was logged in one run. The pre- and post-survey field verification spectra showed consistent activities, indicating the logging system operated properly during the logging event. Energy calibrations differed because of gain drift in the instrumentation. Gain drifts during data collection necessitated multiple energy versus channel number recalibrations during processing of the data to maintain proper peak identification. There were no depth overlaps from which repeatability of data could be judged, because only one log run was necessary to complete the logging of the borehole.

A correction was applied to log data for a casing thickness of 1/4 (0.25) inches. No correction for fluid level was required.

The total gamma-ray log shows a high count rate at a depth of 21.5 ft. Spectra collected at this depth indicated elevated counts in the low-energy continuum. The elevated continuum could be caused by bremsstrahlung radiation, which is the result of a high-energy beta emitter such as Sr-90. Additional information and interpretations of log data for this borehole are included in the main body of the Tank Summary Data Report for tank SX-108.

Log Plot Notes:

Three log plots are provided. The Cs-137 concentrations are provided in a separate log plot to document the relative concentrations and shape of the distribution. A plot of naturally occurring radionuclides (K-40, U-238, and Th-232) is also provided, which can be used for lithology interpretations. A combination plot includes logs of Cs-137, natural gamma, total gamma derived from the spectral data, and the latest available data from the WHC Tank Farms gross gamma logging. The energy peaks from which the radionuclide concentrations were derived are included in the headings for the Cs-137 and natural gamma plots.

A log scale was selected for Cs-137 plots in order to emphasize the peak intensity. On the combination plot, the natural gamma logs, total gamma log, and gross gamma log were plotted on a linear scale. By selecting a linear scale, the maximum peak intensity for the total and gross gamma logs is not shown on the plot, in order to emphasize the more subtle lithology changes. The maximum counts per second for the total gamma and gross gamma logs are 754 and 113, respectively.

The statistical uncertainty in a measurement is represented by uncertainty bars on the log plots where appropriate. This uncertainty is reported at the 95-percent confidence interval. The minimum detectable activity (MDA) is represented as an open circle on the plots. The MDA of a radionuclide represents the lowest concentration at which positive identification of a gamma-ray peak is statistically defensible. If the reported concentration is slightly above the MDA, the 95-percent confidence interval may extend below the MDA value and detection is not assured with 95-percent certainty.

The Tank Farms gross gamma plot is the latest available from WHC. No attempt has been made to adjust the plot for depth discrepancies or other potential problems, with the exception of scale changes.